

## PAVEMENT MARKING MATERIALS

### FIELD SECTION 1048

**1048.1 SCOPE.** To establish procedures for the inspection and reporting of pavement marking materials.

**1048.2 APPARATUS.**

- (a) Micrometer or vernier caliper capable of measuring to 0.0001 in. [0.00254 mm] and accurate to within at least 0.001 in. [0.0254 mm].
- (b) Rule with suitable graduations to accurately measure the material to be inspected.
- (c) One-quart [1 liter] friction top cans which are clean, dry and free of all contaminants.

**1048.3 PROCEDURE.**

**1048.3.1 Type 1 Preformed Marking Tape.**

**1048.3.1.1 Qualified List.** A list of qualified Type 1 Preformed Marking Tape will be maintained by the State Construction and Materials Engineer. The list is shown in [FS-1048 Table 1](#) (Type 1) of this Manual. To obtain qualification of any Type 1 Preformed Marking Tape, the manufacturer shall submit material and application specifications, a 20 foot [6 meter] sample of the tape, and a history of satisfactory use as a pavement marking tape to the engineer for testing and evaluation. The types and widths of marker submitted shall be as directed by the State Construction and Materials Engineer. Following the testing and evaluation, satisfactory markers will be placed on a list of qualified marking tapes.

**1048.3.1.2 Certification.** For acceptance on the project, the contractor shall furnish a manufacturer's certification stating the manufacturer and brand name, and certifying that the material furnished is of the same composition as originally qualified and will in no way be altered or changed.

**1048.3.1.3 Inspection.** The inspector shall visually examine and measure the tape to verify that the tape is in good condition, free of cracks, and with edges straight and unbroken. The material shall be a nominal 4 inches [100 mm] wide and the edges shall not be tapered.

**1048.3.1.3.1** The thickness of Type 1 tape shall be at least 60 mils [1500 µm] without the adhesive.

**1048.3.1.4 Sampling.** Samples are to be taken any time the District personnel consider sampling necessary. The sample shall consist of one piece, full width, not less than 20 feet [6 m] in length. The sample shall be submitted to the Laboratory accompanied by a properly completed SiteManager record showing the manufacturer's name, the brand name and designation of the material, lot number, and net quantity.

**1048.3.1.5 Sample Record.** Type 1 performed marking tape shall be reported through SiteManager and the manufacturer's certification shall be retained in the district office.

**1048.3.1.5.1** Distribution of reports for materials purchased under a Department purchase order is to be as described in [Field Sec 2001](#) of this Manual.

### **1048.3.2 Thermoplastic Pavement Marking Material.**

**1048.3.2.1 Qualified List.** A list of qualified thermoplastic pavement marking material will be maintained by the State Construction and Materials Engineer. The list is shown in [FS-1048 Table 5](#) of this Manual. To obtain qualification of any thermoplastic pavement marking material, the manufacturer shall submit one 50-pound [20 kg] sample of material packaged in accordance with Specification Sec 1048 to the engineer for testing and evaluation. Following the testing and evaluation, satisfactory thermoplastic pavement marking materials will be placed on a list of qualified thermoplastic plastic pavement marking materials.

**1048.3.2.2 Certification.** For acceptance on the project, the contractor shall furnish a manufacturer's certification for each composition batch contained in the inspection lots certifying that the thermoplastic materials supplied conform to all requirements of Specification Sec 1048. The certification shall include or have attached typical results of tests for all specified requirements.

**1048.3.2.3 Sampling and Testing.** Samples are to be taken any time the certification indicates test results approaching the specification limits or any time the district personnel consider sampling necessary. If sampling is performed, samples of thermoplastic marking material are to be taken from each lot presented for inspection. A lot is defined as 22,000 pounds [10,000 kg], or fraction thereof. The sample size shall consist of one 50-pound [20 kg] sample of material packaged in accordance with Specification Sec 1048. The sample shall be submitted to the Laboratory using SiteManager, showing the manufacturer's name, the brand name and designation of the material, lot number, and net quantity.

**1048.3.2.4 Sample Record.** Thermoplastic pavement marking material shall be reported though SiteManager. The manufacturer's certification shall be retained in the district office.

### **1048.3.3 Preformed Removable Pavement Marking Tape.**

**1048.3.3.1 Qualified List.** A list of qualified Preformed Removable Pavement Marking Tape will be maintained by the State Construction and Materials Engineer. The list is shown in [FS-1048 Table 3](#) of this Manual. To obtain qualification of any Preformed Removable Pavement Marking Tape, the manufacturer shall submit material and application specifications, and a 150 foot [45 meter] sample of the tape to the engineer for testing and evaluation. The quantity, types, and widths of marker submitted shall be as directed by the State Construction and Materials Engineer. Following the testing and evaluation, satisfactory markers will be placed on a list of qualified marking tapes.

**1048.3.3.2 Acceptance.** Preformed Removable Pavement Marking Tape appearing on the list of qualified materials may be accepted on the basis of brand name, visual inspection and field performance. Inspection may be performed by Materials or Construction personnel.. A sample record shall be completed in SiteManager showing the manufacturer's name, the brand name and designation of the material, lot number, and net quantity.

### **1048.3.4 Preformed Short Term Pavement Marking Tape.**

**1048.3.4.1 Qualified List.** A list of qualified Preformed Short Term Pavement Marking Tape will be maintained by the State Construction and Materials Engineer. The list is shown in [FS1048 Table 4](#) of this Manual. To obtain qualification of any Preformed Short Term Pavement Marking Tape, the manufacturer shall submit material and application specifications, and a 20 foot [6 meter] sample of the tape to the engineer for testing and evaluation. The quantity, types, and widths of marker submitted shall be as directed by the State Construction and Materials

Engineer. Following the testing and evaluation, satisfactory markers will be placed on a list of qualified marking tapes.

**1048.3.4.2 Acceptance.** Preformed Short Term Pavement Marking Tape appearing on the list of qualified materials may be accepted on the basis of brand name, visual inspection and field performance. Inspection may be performed by Materials or Construction personnel. A sample record shall be completed in SiteManager showing the manufacturer's name, the brand name and designation of the material, lot number, and net quantity.

**1048.3.5 Hot Spray Thermoplastic Pavement Marking Material.** A list of qualified hot spray thermoplastic pavement marking material will be maintained by the State Construction and Materials Engineer. The list is shown in [FS-1048 Table 7](#) of this Manual. Qualification, certification, sampling, testing, and reporting are the same as for thermoplastic pavement marking material.

#### **1048.3.6 Drop-on Glass Beads.**

**1048.3.6.1 Qualified List.** A list of qualified drop-on glass beads will be maintained by the State Construction and Materials Engineer. The list is shown in [FS-1048 Table 6](#) of this Manual. To obtain qualification of drop-on glass beads, the manufacturer shall submit a one quart [one liter] sample in a friction top can to the engineer for testing and evaluation. Following the testing and evaluation, satisfactory beads will be placed on a list of qualified drop-on glass beads.

**1048.3.6.2 Certification.** For acceptance on the project, the contractor shall furnish a manufacturer's certification for each lot, certifying that the beads supplied conform to all requirements of Specification Sec 1048. The certification shall include or have attached specific results of tests performed for roundness, refractive index, flow characteristics, and gradation. The certifications shall show the quantity and lot number.

**1048.3.6.3 Sampling and Testing.** Samples are to be taken any time the certification indicates test results approaching the specification limits or any time the district or General Headquarters personnel consider sampling necessary. If sampling is performed, samples of glass beads are to be taken from each lot in the shipment presented for inspection. A lot is defined as 10,000 pounds [4500 kg], or fraction thereof. The manufacturer's lot numbers, if any exist; will be ignored when determining which material will be sampled. The sample size shall consist of one quart [1 liter] of beads in a friction top can. A sample shall be obtained from a container by first scraping back the top layer of beads to a depth of at least 2 inches [50 mm]. A sample of beads sufficient to fill a one quart [1 liter] can should then be scooped out. When sampling large boxes or bags, a sampling thief capable of reaching the bottom of the container is preferred. (Care should be exercised when using a sampling thief to obtain samples from large bags so that the bag is not punctured.) Each quart sample should be taken from a different container selected from random locations within the shipment. As the samples are obtained, each can shall be identified with the inspector's identification number (For example: 33XYZ001) and consecutive letters of the alphabet, i.e., 33XYZ001A, 33XYZ001B, 33XYZ001C, etc. The container from which each sample is taken shall be marked with the sample's identification number for future reference. The sample shall be submitted to the Laboratory through a SiteManager record showing the manufacturer's name, lot number, and net quantity.

**1048.3.6.4 Sample Record.** Drop-on glass beads shall be reported through SiteManager. The manufacturer's certification shall be retained in the district office.

### **1048.3.7 Acrylic Waterborne Traffic Marking Paint.**

**1048.3.7.1 Qualified List.** A list of qualified suppliers is listed in [FS 1048 Table 8](#) of this Manual. This list is based on those suppliers who submit material meeting the requirements of the specification for MoDOT General Services bids. The list is updated yearly.

**1048.3.7.2 Sampling and Testing.** Samples consisting of two quart [liter] samples for each color are required for non-qualified paints and may be sent in as desired for qualified suppliers.

**1048.3.7.3 Acceptance.** Acrylic waterborne traffic marking paint from qualified suppliers may be accepted by certification conforming to the specification requirements. Non-qualified suppliers must be sampled and approved for each lot of material offered for inspection prior to acceptance. Acrylic waterborne traffic marking paint may not be substituted for acrylic co-polymer, if acrylic co-polymer is specified.

**1048.3.7.4 Sample Record.** Paint shall be reported through SiteManager, indicating either acceptance by certification with the certification retained in the district office or acceptance by testing with reference to the laboratory tests.

### **1048.3.8 Acrylic Co-Polymer Traffic Marking Paint.**

**1048.3.8.1 Qualified List.** A list of qualified suppliers is listed in [FS 1048 Table 2](#) of this Manual. This list is based on those suppliers who submit material meeting the requirements of the specification for MoDOT General Services bids. The list is updated yearly.

**1048.3.8.2 Sampling and Testing.** Samples consisting of two quart [liter] samples for each color are required for non-qualified paints and may be sent in as desired for qualified suppliers.

**1048.3.8.3 Acceptance.** Acrylic co-polymer traffic marking paint from qualified suppliers may be accepted by certification conforming to the specification requirements. Non-qualified suppliers must be sampled and approved for each lot of material offered for inspection prior to acceptance. This material may be accepted as a substitute for acrylic waterborne traffic marking paint, however, it may not be accepted in lieu of high-build acrylic waterborne traffic marking paint.

**1048.3.8.4 Sample Record.** Paint shall be reported through SiteManager, indicating either acceptance by certification with the certification retained in the district office or acceptance by testing with reference to the laboratory tests.

### **1048.3.9 Epoxy Traffic Marking Paint.**

**1048.3.9.1 Sampling and Testing.** Samples consisting of one quart [liter] of each component are required. Samples of Type 1 or Type P drop-on glass beads taken in accordance with FS 1048.3.6.3 are required.

**1048.3.9.2 Acceptance.** Epoxy traffic marking paint must be sampled and approved for each lot of material offered for inspection prior to acceptance.

**1048.3.9.3 Sample Record.** Paint shall be reported through SiteManager, indicating acceptance by testing with reference to the laboratory tests.

**1048.3.10 General Reporting.** Unless otherwise indicated, all reports are to indicate acceptance, qualified acceptance, or rejection. Appropriate remarks, as described in [General Sec 7](#) of this Manual, are to be included in the report to clarify conditions of acceptance or rejection.